

# (12) UK Patent Application (19) GB (11) 2 127 911 A

(21) Application No 8228211

(22) Date of filing

2 Oct 1982

(43) Application published

18 Apr 1984

(51) INT CL<sup>3</sup> F16J 15/06

15/10

(52) Domestic classification

F2B 1B 1G

G1R WC

U1S 2146 F2B G1R

(56) Documents cited

GB 1321145

(58) Field of search

F2B

G1R

(71) Applicant

United Gas Industries

PLC

(United Kingdom)

216 Rowan Road

Streatham Vale

London SW16 5HX

(72) Inventors

Constantine Michaelides

Henry Herbert Cork

(74) Agent and/or Address for  
Service

Eileen Margaret

Betteridge

170 Rowan Road

Streatham Vale

London SW16 5JE

## (54) Flange seal

(57) A gas meter casing (11) has two facing flanges (11', 12') and a third flange (13') therebetween.

The third flange is formed at a small angle e.g. between 5° and 7°, to the facing flanges. To seal the flanges together beads (15, 16) of a silicone rubber gasketing material are formed on the facing surfaces of the outer flanges and the sandwich pressed together. The gasketing material is thus forced to flow into the tapered spaces formed at each side of the centre flange.

The tapered shape of the gaskets conveys both the advantage of a narrow gap (less leak potential) and of a thicker gasket (more resistance to damage).

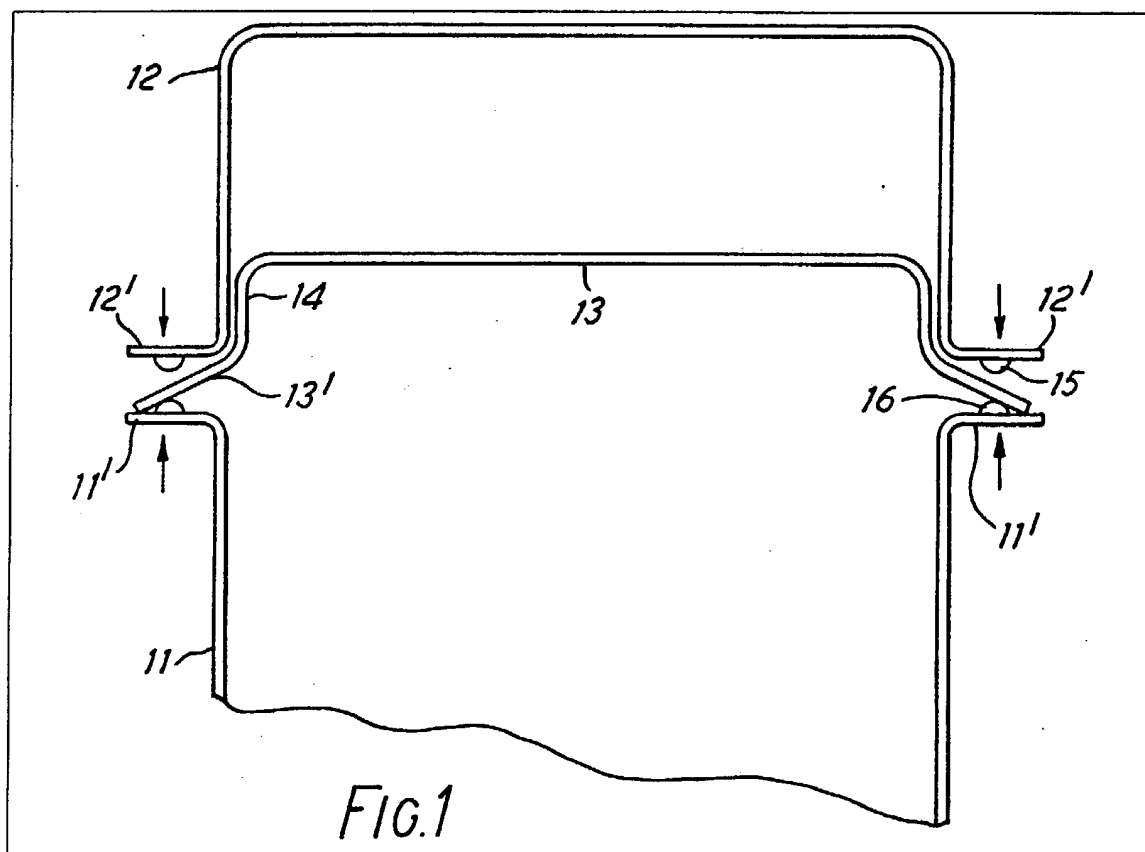


FIG.1

The drawing originally filed was informal and the print here reproduced is taken from a later filed formal copy.

1/1

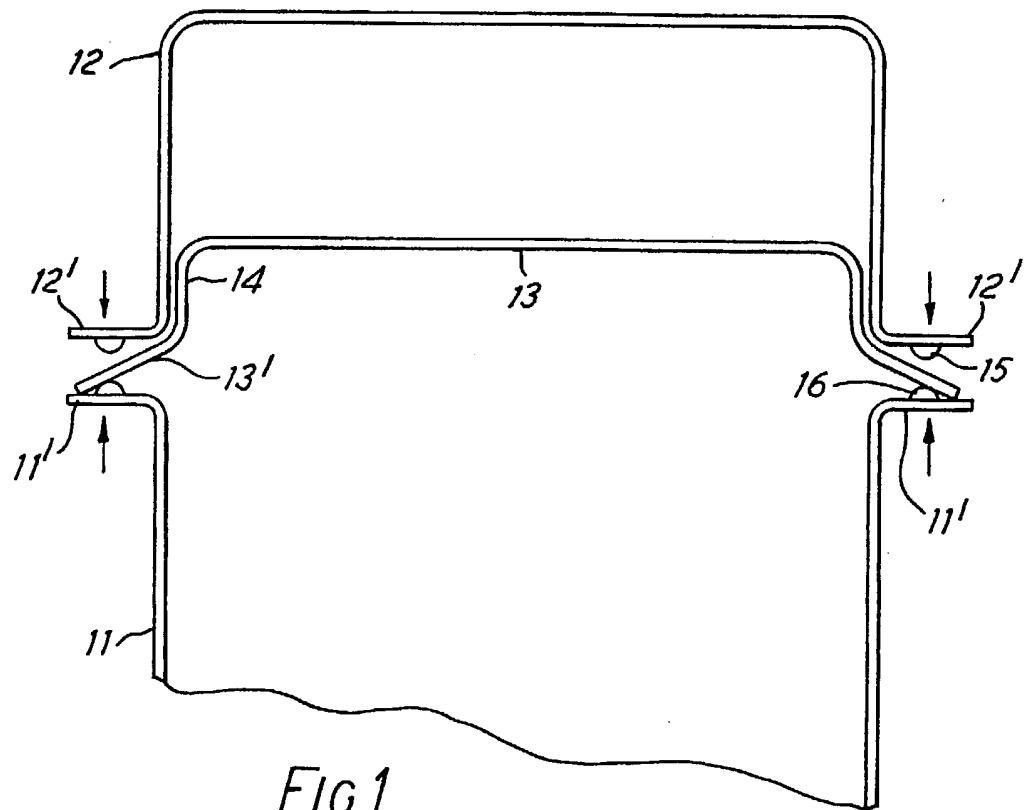


FIG. 1

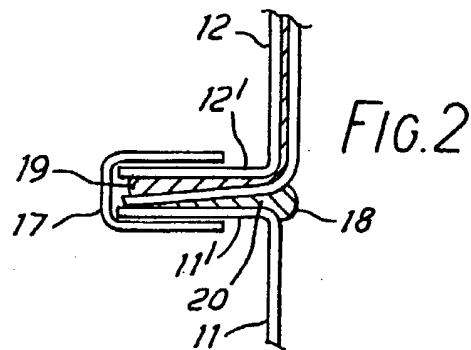


FIG. 2

## SPECIFICATION

### Flange seal

- 5 This invention relates to a flange seal and to a method of forming such a seal.

The invention provides a flange seal comprising a pair of facing flanges and a third flange interposed between the facing flanges, said third flange lying at a small angle to said facing flanges whereby to form tapered spaces therewith and a flexible gasketing material filling said spaces.

Such a flange seal may form part of a gas meter casing, the third flange being part of a valve plate of the meter.

According to another aspect, the invention provides a method of forming a flange seal between three flanges, the centre flange of which lies at a small angle to the outer flanges, comprising the steps of applying beads of settable, flexible gasketing material to the facing sides of the two outer flanges, and applying pressure to the sandwich formed by the three flanges so that the gasketing material flows into thin sheets guided by said centre flange.

Preferably the pressure applied to the sandwich is sufficient to reduce the angle at which the centre flange lies.

The small angle may be between 5° and 7°.

A specific embodiment of the invention is shown in the accompanying drawings, in which:—

35 *Figure 1* is a diagrammatic section through part of a gas meter casing, and

*Figure 2* is a detail of a joint of the casing of Fig. 1, after closure.

A gas meter casing comprises a base part 40 (11) and a cover part (12) each part having an outwardly-turned flange (11', 12') respectively. In assembly these flanges are parallel and are sandwiched together with the outer flange (13') of a valve plate (13) there-  
45 between and the join is sealed to be gas tight.

As shown, the valve plate (13) is dished so that a portion (14) lies closely adjacent the inner periphery of the cover part (12).

To improve the seal between the various 50 flanges, the flange (13') of the valve plate is not parallel with the flange (12') of the cover part, but is angled toward the flange (11') of the base part by an angle of between 5° and 7°. (This angle is shown exaggerated in the drawing for the purpose of illustrating the invention better).

In assembly beads (15, 16) of a silicone rubber gasketing material which sets to a rubbery consistency are deposited on the 60 facing surfaces of flanges (11') and (12'). Before the material is fully set, the flanges are urged toward one another and a U-section band (17) pressed over the flanges as shown in Fig. 2. In this operation the silicone rubber  
65 beads flow out to form thin adherent sheets

between the flanges (12', 11') and the flange (13'). As shown in the cross-hatched areas of Fig. 2, the bead (15), pressed between flange (12') and flange (13') is extruded up between 70 dished portion (14) and the cover part (12) to form an extensive sealed area. The tapered gap (19) between flange (12') and flange (13') is also filled giving a thicker seal at the outer edges of the flanges. The bead (16), 75 pressed between flange (11') and flange (13') is extruded into a tapered shape (20), the thicker end forming a bead (18) on the inner edges of the flanges. In the pressing operation the angle of the flange (13') is partially 80 straightened, the movement of the flange taking part in urging the gasketing material to flow into the locations shown.

It will be noted from Fig. 2 that each side of flange (13') has a tapered gap filled with 85 gasketing material. The narrow parts of the tapered gaps present a minimum probability of gas leaks, while the thicker parts of the tapered gaps provide a thicker portion of gasketing material. The thicker portions of 90 gasketing material are important in resisting the effects of movement due for instance to the meter being knocked. The thicker the material, the bigger the flexing movement it can make without being dislodged from the 95 flanges.

It will be noted that the angled flange (13') influences the direction in which the gasketing material is forced to flow so as to make the best use of the material. It is found that 100 there is less wastage of the material since less is extruded out from the outer edges of the flanges. Moreover, the flow is better controlled and a more even sheet of sealing material is produced, and therefore a more 105 reliable seal.

Although the invention has been described specifically with respect to a gas meter casing, it may be applied to other flange arrangements which require to be sealed.

110

### CLAIMS

1. A sealed flange comprising a pair of facing flanges and a third flange interposed between the facing flanges, said third flange 115 lying at a small angle to said facing flanges whereby to form tapered spaces therewith, and a flexible gasketing material filling said spaces.
2. A sealed flange as claimed in claim 1, 120 wherein said small angle lies between 5° and 7°.
3. A sealed flange as claimed in claim 1 or claim 2, wherein said gasketing material is a silicone rubber.
- 125 4. A flange as claimed in any of claims 1 to 3, having also a U-section band pressed thereover.
5. A sealed flange as claimed in any of claims 1 to 4, wherein one of said tapered 130 spaces is fill with gasketing material which

forms a bead at the thicker end of the tapered space.

6. A gas meter casing having a sealed flange substantially as described hereinbefore with reference to the accompanying drawings.

5 7. A method of forming a flange seal between three flange, comprising forming the centre flange at a small angle to the outer flanges, applying beads of settable, flexible gasketting material to the facing sides of the  
10 two outer flanges and applying pressure to the sandwich formed by the three flanges so that the gasketting material flows into thin sheets guided by said centre flange.

15 8. A method as claimed in claim 7, wherein the pressure applied to the sandwich is sufficient to bend the centre flange to reduce the angle at which it lies.

9. A method as claimed in claim 7 or  
20 claim 8, wherein said pressure-applying step includes pressing a U-shaped band over the sandwich

10. A method of forming a flange seal between three flanges substantially as described hereinbefore with reference to the  
25 accompanying drawings.

11. A gas meter casing having a sealed flange as claimed in any of claims 1 to 5, or formed by the method of any of claims 7 to  
30 10.

---

Printed for Her Majesty's Stationery Office  
by Burgess & Son (Abingdon) Ltd.—1984.  
Published at The Patent Office, 25 Southampton Buildings,  
London, WC2A 1AY, from which copies may be obtained.